

**ABSTRACT:****EQUALISATION APPARATUS AND METHODS**

The invention relates to apparatus, methods and computer program code for equalisation. A soft-in-soft-out (SISO) equaliser for use in a receiver for receiving data from a transmitter configured to transmit data from a plurality of transmit antennas simultaneously is described. The equaliser comprises at least one received signal input for inputting a received signal; a plurality of likelihood value inputs, one for each transmit antenna, for inputting a plurality of decoded signal likelihood values from a SISO decoder; a processor configured to determine from said plurality of signal likelihood values an estimated mean and covariance value for a signal from each of said transmit antennas; an expected signal determiner coupled to said processor to determine an expected received signal value using said mean values; a subtractor coupled to said received signal input to subtract said expected received signal value from said received signal to provide a compensated signal; a filter coupled to said subtractor to filter said compensated signal to provide a plurality of estimated transmitted signal values, one for each said transmit antenna; a filter coefficient determiner coupled to said processor to determine coefficients of said filter using said covariance values; and an output stage coupled to said filter to output a plurality of transmitted signal likelihood values, one for each said transmit antenna, for input to said SISO decoder.

Figure 4.